

Non-thermal treatments impact on safety and quality aspects of refrigerated strawberry (*Fragaria ananassa*).

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Abstract

Thermal treatments, when conveniently applied, are efficient in reducing microbial load of fruits and vegetables. However, the negative impact of heat, especially at food texture level, makes non-thermal treatments promising technologies as minimal food processes.

The objective of this work was to study the effect of some innovative technologies (ozone in aqueous solution, ultraviolet light and ultrasounds) on safety (evaluated by total mesophyls and yeasts and moulds enumerations – autoctone flora) and some quality features (pH, colour, anthocyanines and texture) of strawberries (used as case study), throughout 13 days of storage at 5°C and at room temperature. Results were compared to water-washings, performed as a control.

Strawberry samples suffered a non-thermal treatment for 2 minutes, before being stored at the referred temperatures. Ozone was applied in aqueous solution (2 ppm), a chamber of UV-C light using 12,36 W/m² was used, and ultrasounds equipment operated at 32 kHz.

Results showed that all analysed treatments had no significant impact on strawberries' safety and quality, being equivalent to a water-washing. Total mesophyls and yeasts and moulds counts increased along storage time, and counts were higher for the highest storage temperature.

Similar results were obtained for quality characteristics (i.e. no significant differences were observed between the treatments).

Throughout storage, and at both temperatures, texture (analysed through firmness) decreased as well as anthocyanines content; no pH changes were observed; changes in colour were significant. This impact was more evident at room temperature.